

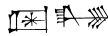
THE WORKS
AND CORRESPONDENCE OF
David Ricardo

Edited by Piero Sraffa
with the Collaboration of M. H. Dobb



VOLUME I

On the Principles of
Political Economy and
Taxation



LIBERTY FUND
INDIANAPOLIS

ADVERTISEMENT TO THE THIRD EDITION

IN this Edition I have endeavoured to explain more fully than in the last, my opinion on the difficult subject of VALUE, and for that purpose have made a few additions to the first chapter. I have also inserted a new chapter on the subject of MACHINERY, and on the effects of its improvement on the interests of the different classes of the State. In the chapter on the DISTINCTIVE PROPERTIES OF VALUE AND RICHES, I have examined the doctrines of M. Say on that important question, as amended in the fourth and last edition of his work. I have in the last chapter endeavoured to place in a stronger point of view than before, the doctrine of the ability of a country to pay additional money taxes, although the aggregate money value of the mass of its commodities should fall, in consequence either of the diminished quantity of labour required to produce its corn at home, by improvements in its husbandry, or from its obtaining a part of its corn at a cheaper price from abroad, by means of the exportation of its manufactured commodities. This consideration is of great importance, as it regards the question of the policy of leaving unrestricted the importation of foreign corn, particularly in a country burthened with a heavy fixed money taxation, the consequence of an immense National Debt. I have endeavoured to shew, that the ability to pay taxes, depends, not on the gross money value of the mass of commodities, nor on the net money value of the revenues of capitalists and landlords, but on the money value of each man's revenue, compared to the money value of the commodities which he usually consumes.

March 26, 1821.

The text on this page and the next one is the editor speaking, not Ricardo. I included it because the editor gives some background on the chapter.

The actual chapter from Ricardo's *Principles* begins with the page titled "Chapter XXXI On Machinery."

The most revolutionary change in edition 3 is the new chapter On Machinery, in which Ricardo retracts his previous opinion that the introduction of machinery is beneficial to all the different classes of society. 'My mistake', he explains, 'arose from the supposition, that whenever the net income of a society increased, its gross income would also increase; I now, however, see reason to be satisfied that the one fund, from which landlords and capitalists derive their revenue, may increase, while the other, that upon which the labouring class mainly depend, may diminish'.⁶ His conclusion must have shocked his friends even more than the change of principle itself: 'That the opinion entertained by the labouring class, that the employment of machinery is frequently detrimental to their interests, is not founded on prejudice and error, but is conformable to the correct principles of political economy.'⁷

Previously Ricardo had held the view that, since machinery made it possible to produce commodities at a lower cost, it must lead to an increase in their quantity and accordingly be beneficial to all classes of society. He had not expressed this view in the earlier editions of the *Principles*, and the only place where he had stated in print an opinion as to the effect of machinery upon labour was an incidental reference in the *Essay on Profits* where he alluded to 'the effects of improved machinery, which it is now no longer questioned, has a decided tendency to raise the real wages of labour.'⁸ But as he

¹ See below, VIII, 301.

² Below, pp. 279–285.

³ Below, pp. 287–8.

⁴ Below, VIII, 315.

⁵ Below, p. 249, p. 264 and p. 348.

⁶ Below, p. 388.

⁷ Below, p. 392.

⁸ Below, IV, 35.

says at the beginning of the new chapter he had ‘in other ways’ given support to those doctrines. He probably had in mind a speech in Parliament in 1819 on Robert Owen’s plan in which he had declared that ‘it could not be denied, on the whole view of the subject, that machinery did not lessen the demand for labour’.¹ Barton’s pamphlet of 1817, *Observations on the Condition of the Labouring Classes*, with its view as to the adverse effects of machinery on labour, does not seem to have influenced Ricardo at the time of its publication;² although he quotes it with approval in the new chapter in edition 3. When M^cCulloch, in an article on ‘Taxation and the Corn Laws’ in the *Edinburgh Review* of January 1820, had approved the ideas of Barton (of whose pamphlet the article was ostensibly a review), Ricardo wrote to M^cCulloch contesting this opinion. M^cCulloch had stated that ‘the fixed capital invested in a machine, must always displace a considerably greater quantity of circulating capital,—for otherwise there could be no motive to its erection; and hence its first effect is to sink, rather than increase, the rate of wages.’³ In reply Ricardo had said: ‘the employment of machinery I think never diminishes the demand for labour—it is never a cause of a fall in the price of labour, but the effect of its rise.’⁴ M^cCulloch became a convert to this view, and in an article in the *Edinburgh Review* of March 1821 maintained that ‘no improvement of machinery can possibly diminish the demand for labour, or reduce the rate of wages.’⁵ It is scarcely surprising that he should have taken strong exception to Ricardo’s sudden change of front on the matter, and that on seeing the new edition he should have bitterly complained (in a letter now first published) of ‘the extreme erroneousness of the principles to which you have incautiously lent the sanction of your name’.⁶

¹ 16 Dec. 1819, below, V, 30. That it was generally accepted that Ricardo held these views is shown by Malthus’ statement in his *Principles of Political Economy*: ‘I quite agree with Mr. Ricardo, however, in approving all saving of labour and inventions in machinery’ (below, II, 381).

² Cp. Ricardo’s letter to Barton of 20 May 1817, which however was prior to the publication of the

pamphlet (below, VII, 157–9).

³ *Edinburgh Review*, Jan. 1820, p. 171.

⁴ Letter to M^cCulloch, 29 March 1820, below, VIII, 171.

⁵ *Edinburgh Review*, March 1821, p. 115.

⁶ M^cCulloch to Ricardo, 5 June 1821, below, VIII, 382. He also says that if Ricardo’s new opinion is correct ‘the laws against the Luddites are a disgrace to the Statute book’ (*ib.* 385).

CHAPTER XXXI

On Machinery¹

IN the present chapter I shall enter into some enquiry respecting the influence of machinery on the interests of the different classes of society, a subject of great importance, and one which appears never to have been investigated in a manner to lead to any certain or satisfactory results. It is more incumbent on me to declare my opinion on this question, because they have, on further reflection, undergone a considerable change; and although I am not aware that I have ever published any thing respecting machinery which it is necessary for me to retract, yet I have in other ways ² given my support to doctrines which I now think erroneous; it, therefore, becomes a duty in me to submit my present views to examination, with my reasons for entertaining them.

Ever since I first turned my attention to questions of political economy, I have been of opinion, that such an application of machinery to any branch of production, as should have the effect of saving labour, was a general good, accompanied only with that portion of inconvenience which in most cases attends the removal of capital and labour from one employment to another. It appeared to me, that provided the landlords had the same money rents, they would be benefited by the reduction in the prices of some of the commodities on which those rents were expended, and which reduction of price could not fail to be the consequence of the employment of machinery. The capitalist, I thought, was eventually benefited precisely in the

¹ Eds. 1–2 do not contain this chapter.

² Perhaps an allusion to his own speech on Owen's plan on 16 Dec. 1819; see below, V, 30.

same manner. He, indeed, who made the discovery of the machine, or who first usefully applied it, would enjoy an additional advantage, by making great profits for a time; but, in proportion as the machine came into general use, the price of the commodity produced, would, from the effects of competition, sink to its cost of production, when the capitalist would get the same money profits as before, and he would only participate in the general advantage, as a consumer, by being enabled, with the same money revenue, to command an additional quantity of comforts and enjoyments. The class of labourers also, I thought, was equally benefited by the use of machinery, as they would have the means of buying more commodities with the same money wages, and I thought that no reduction of wages would take place, because the capitalist would have the power of demanding and employing the same quantity of labour as before, although he might be under the necessity of employing it in the production of a new, or at any rate of a different commodity. If, by improved machinery, with the employment of the same quantity of labour, the quantity of stockings could be quadrupled, and the demand for stockings were only doubled, some labourers would necessarily be discharged from the stocking trade; but as the capital which employed them was still in being, and as it was the interest of those who had it to employ it productively, it appeared to me that it would be employed on the production of some other commodity, useful to the society, for which there could not fail to be a demand; for I was, and am, deeply impressed with the truth of the observation of Adam Smith, that “the desire for food is limited in every man, by the narrow capacity of the human stomach, but the desire of the conveniences, and ornaments of building, dress, equipage and household furniture, seems to have no limit or certain boundary.”¹ As, then, it appeared to me that there would be

¹ Also quoted above, p. 293.

the same demand for labour as before, and that wages would be no lower, I thought that the labouring class would, equally with the other classes, participate in the advantage, from the general cheapness of commodities arising from the use of machinery.

These were my opinions, and they continue unaltered, as far as regards the landlord and the capitalist; but I am convinced, that the substitution of machinery for human labour, is often very injurious to the interests of the class of labourers.

My mistake arose from the supposition, that whenever the net income of a society increased, its gross income would also increase; I now, however, see reason to be satisfied that the one fund, from which landlords and capitalists derive their revenue, may increase, while the other, that upon which the labouring class mainly depend, may diminish, and therefore it follows, if I am right, that the same cause which may increase the net revenue of the country, may at the same time render the population redundant, and deteriorate the condition of the labourer.

A capitalist we will suppose employs a capital of the value of 20,000*l.* and that he carries on the joint business of a farmer, and a manufacturer of necessaries. We will further suppose, that 7000*l.* of this capital is invested in fixed capital, viz. in buildings, implements, &c. &c. and that the remaining 13,000*l.* is employed as circulating capital in the support of labour. Let us suppose, too, that profits are 10 per cent., and consequently that the capitalist's capital is every year put into its original state of efficiency, and yields a profit of 2000*l.*

Each year the capitalist begins his operations, by having food and necessaries in his possession of the value of 13,000*l.*, all of which he sells in the course of the year to his own workmen for that sum of money, and, during the same period, he pays them the like amount of money for wages: at the end of the year they replace in his possession food and necessaries of the value of 15,000*l.*, 2000*l.* of which he consumes himself, or disposes of

as may best suit his pleasure and gratification. As far as these products are concerned, the gross produce for that year is 15,000*l.*, and the net produce 2000*l.* Suppose now, that the following year the capitalist employs half his men in constructing a machine, and the other half in producing food and necessaries as usual. During that year he would pay the sum of 13,000*l.* in wages as usual, and would sell food and necessaries to the same amount to his workmen; but what would be the case the following year?

While the machine was being made, only one-half of the usual quantity of food and necessaries would be obtained, and they would be only one-half the value of the quantity which was produced before. The machine would be worth 7500*l.*, and the food and necessaries 7500*l.*, and, therefore, the capital of the capitalist would be as great as before; for he would have besides these two values, his fixed capital worth 7000*l.*, making in the whole 20,000*l.* capital, and 2000*l.* profit. After deducting this latter sum for his own expenses, he would have a no greater circulating capital than 5500*l.* with which to carry on his subsequent operations; and, therefore, his means of employing labour, would be reduced in the proportion of 13,000*l.* to 5500*l.*, and, consequently, all the labour which was before employed by 7500*l.*, would become redundant.

The reduced quantity of labour which the capitalist can employ, must, indeed, with the assistance of the machine, and after deductions for its repairs, produce a value equal to 7500*l.*, it must replace the circulating capital with a profit of 2000*l.* on the whole capital; but if this be done, if the net income be not diminished, of what importance is it to the capitalist, whether the gross income be of the value of 3000*l.*, of 10,000*l.*, or of 15,000*l.*?

In this case, then, although the net produce will not be diminished in value, although its power of purchasing com-

modities may be greatly increased, the gross produce will have fallen from a value of 15,000*l.* to a value of 7500*l.*, and as the power of supporting a population, and employing labour, depends always on the gross produce of a nation, and not on its net produce, there will necessarily be a diminution in the demand for labour, population will become redundant, and the situation of the labouring classes will be that of distress and poverty.

As, however, the power of saving from revenue to add to capital, must depend on the efficiency of the net revenue, to satisfy the wants of the capitalist, it could not fail to follow from the reduction in the price of commodities consequent on the introduction of machinery, that with the same wants he would have increased means of saving,—increased facility of transferring revenue into capital. But with every increase of capital he would employ more labourers; and, therefore, a portion of the people thrown out of work in the first instance, would be subsequently employed; and if the increased production, in consequence of the employment of the machine, was so great as to afford, in the shape of net produce, as great a quantity of food and necessaries as existed before in the form of gross produce, there would be the same ability to employ the whole population, and, therefore, there would not necessarily be any redundancy of people.

All I wish to prove, is, that the discovery and use of machinery may be attended with a diminution of gross produce; and whenever that is the case, it will be injurious to the labouring class, as some of their number will be thrown out of employment, and population will become redundant, compared with the funds which are to employ it.

The case which I have supposed, is the most simple that I could select; but it would make no difference in the result, if we supposed that the machinery was applied to the trade of any manufacturer,—that of a clothier, for example, or of a cotton

manufacturer. If in the trade of a clothier, less cloth would be produced after the introduction of machinery; for a part of that quantity which is disposed of for the purpose of paying a large body of workmen, would not be required by their employer. In consequence of using the machine, it would be necessary for him to reproduce a value, only equal to the value consumed, together with the profits on the whole capital. 7500*l.* might do this as effectually as 15,000*l.* did before, the case differing in no respect from the former instance. It may be said, however, that the demand for cloth would be as great as before, and it may be asked from whence would this supply come? But by whom would the cloth be demanded? By the farmers and the other producers of necessaries, who employed their capitals in producing these necessaries as a means of obtaining cloth: they gave corn and necessaries to the clothier for cloth, and he bestowed them on his workmen for the cloth which their work afforded him.

This trade would now cease; the clothier would not want the food and clothing, having fewer men to employ and having less cloth to dispose of. The farmers and others, who only produced necessaries as means to an end, could no longer obtain cloth by such an application of their capitals, and, therefore, they would either themselves employ their capitals in producing cloth, or would lend them to others, in order that the commodity really wanted might be furnished; and that for which no one had the means of paying, or for which there was no demand, might cease to be produced. This, then, leads us to the same result; the demand for labour would diminish, and the commodities necessary to the support of labour would not be produced in the same abundance.

If these views be correct, it follows, 1st. That the discovery, and useful application of machinery, always leads to the increase of the net produce of the country, although it may not, and will

not, after an inconsiderable interval, increase the value of that net produce.

2dly. That an increase of the net produce of a country is compatible with a diminution of the gross produce, and that the motives for employing machinery are always sufficient to insure its employment, if it will increase the net produce, although it may, and frequently must, diminish both the quantity of the gross produce, and its value.

3dly. That the opinion entertained by the labouring class, that the employment of machinery is frequently detrimental to their interests, is not founded on prejudice and error, but is conformable to the correct principles of political economy.

4thly. That if the improved means of production, in consequence of the use of machinery, should increase the net produce of a country in a degree so great as not to diminish the gross produce, (I mean always quantity of commodities and not value,) then the situation of all classes will be improved. The landlord and capitalist will benefit, not by an increase of rent and profit, but by the advantages resulting from the expenditure of the same rent, and profit, on commodities, very considerably reduced in value, while the situation of the labouring classes will also be considerably improved; 1st, from the increased demand for menial servants; 2dly, from the stimulus to savings from revenue, which such an abundant net produce will afford; and 3dly, from the low price of all articles of consumption on which their wages will be expended.

Independently of the consideration of the discovery and use of machinery, to which our attention has been just directed, the labouring class have no small interest in the manner in which the net income of the country is expended, although it should, in all cases, be expended for the gratification and enjoyments of those who are fairly entitled to it.

If a landlord, or a capitalist, expends his revenue in the manner of an ancient baron, in the support of a great number of retainers, or menial servants, he will give employment to much more labour, than if he expended it on fine clothes, or costly furniture; on carriages, on horses, or in the purchase of any other luxuries.

In both cases the net revenue would be the same, and so would be the gross revenue, but the former would be realised in different commodities. If my revenue were 10,000*l.*, the same quantity nearly of productive labour would be employed, whether I realised it in fine clothes and costly furniture, &c. &c. or in a quantity of food and clothing of the same value. If, however, I realised my revenue in the first set of commodities, no more labour would be *consequently* employed:—I should enjoy my furniture and my clothes, and there would be an end of them; but if I realised my revenue in food and clothing, and my desire was to employ menial servants, all those whom I could so employ with my revenue of 10,000*l.*, or with the food and clothing which it would purchase, would be to be added to the former demand for labourers, and this addition would take place only because I chose this mode of expending my revenue. As the labourers, then, are interested in the demand for labour, they must naturally desire that as much of the revenue as possible should be diverted from expenditure on luxuries, to be expended in the support of menial servants.

In the same manner, a country engaged in war, and which is under the necessity of maintaining large fleets and armies, employs a great many more men than will be employed when the war terminates, and the annual expenses which it brings with it, cease.

If I were not called upon for a tax of 500*l.* during the war, and which is expended on men in the situations of soldiers and sailors, I might probably expend that portion of my income on

furniture, clothes, books, &c. &c. and whether it was expended in the one way or in the other, there would be the same quantity of labour employed in production; for the food and clothing of the soldier and sailor would require the same amount of industry to produce it as the more luxurious commodities; but in the case of the war, there would be the additional demand for men as soldiers and sailors; and, consequently, a war which is supported out of the revenue, and not from the capital of a country, is favourable to the increase of population.

At the termination of the war, when part of my revenue reverts to me, and is employed as before in the purchase of wine, furniture, or other luxuries, the population which it before supported, and which the war called into existence, will become redundant, and by its effect on the rest of the population, and its competition with it for employment, will sink the value of wages, and very materially deteriorate the condition of the labouring classes.

There is one other case that should be noticed of the possibility of an increase in the amount of the net revenue of a country, and even of its gross revenue, with a diminution of demand for labour, and that is, when the labour of horses is substituted for that of man. If I employed one hundred men on my farm, and if I found that the food bestowed on fifty of those men, could be diverted to the support of horses, and afford me a greater return of raw produce, after allowing for the interest of the capital which the purchase of the horses would absorb, it would be advantageous to me to substitute the horses for the men, and I should accordingly do so; but this would not be for the interest of the men, and unless the income I obtained, was so much increased as to enable me to employ the men as well as the horses, it is evident that the population would become redundant, and the labourers' condition would sink in the general scale. It is evident he could not, under any

circumstances, be employed in agriculture; but if the produce of the land were increased by the substitution of horses for men, he might be employed in manufactures, or as a menial servant.

The statements which I have made will not, I hope, lead to the inference that machinery should not be encouraged. To elucidate the principle, I have been supposing, that improved machinery is *suddenly* discovered, and extensively used; but the truth is, that these discoveries are gradual, and rather operate in determining the employment of the capital which is saved and accumulated, than in diverting capital from its actual employment.

With every increase of capital and population, food will generally rise, on account of its being more difficult to produce. The consequence of a rise of food will be a rise of wages, and every rise of wages will have a tendency to determine the saved capital in a greater proportion than before to the employment of machinery. Machinery and labour are in constant competition, and the former can frequently not be employed until labour rises.

In America and many other countries, where the food of man is easily provided, there is not nearly such great temptation to employ machinery as in England, where food is high, and costs much labour for its production. The same cause that raises labour, does not raise the value of machines, and, therefore, with every augmentation of capital, a greater proportion of it is employed on machinery. The demand for labour will continue to increase with an increase of capital, but not in proportion to its increase; the ratio will necessarily be a diminishing ratio.*

* "The demand for labour depends on the increasing of circulating, and not of fixed capital. Were it true that the proportion between these two sorts of capital is the same at all times, and in all countries, then, indeed, it follows that the number of labourers employed is in proportion to the wealth of the State. But such a position has not the semblance of prob-

I have before observed, too, that the increase of net incomes, estimated in commodities, which is always the consequence of improved machinery, will lead to new savings and accumulations. These savings, it must be remembered are annual, and must soon create a fund, much greater than the gross revenue, originally lost by the discovery of the machine, when the demand for labour will be as great as before, and the situation of the people will be still further improved by the increased savings which the increased net revenue will still enable them to make.

The employment of machinery could never be safely discouraged in a State, for if a capital is not allowed to get the greatest net revenue that the use of machinery will afford here, it will be carried abroad, and this must be a much more serious discouragement to the demand for labour, than the most extensive employment of machinery; for, while a capital is employed in this country, it must create a demand for some labour; machinery cannot be worked without the assistance of men, it

ability. As arts are cultivated, and civilization is extended, fixed capital bears a larger and larger proportion to circulating capital. The amount of fixed capital employed in the production of a piece of British muslin is at least a hundred, probably a thousand times greater than that employed in the production of a similar piece of Indian muslin. And the proportion of circulating capital employed is a hundred or a thousand times less. It is easy to conceive that, under certain circumstances, the whole of the annual savings of an industrious people might be added to fixed capital, in which case they would have no effect in increasing the demand for labour."

Barton, "On the Condition of the Labouring Classes of Society,"¹ page 16.

It is not easy, I think, to conceive that under any circumstances, an increase of capital should not be followed by an increased demand for labour; the most that can be said is, that the demand will be in a diminishing ratio. Mr. Barton, in the above publication, has, I think, taken a correct view of some of the effects of an increasing amount of fixed capital on the condition of the labouring classes. His Essay contains much valuable information.

¹ *Observations on the Circumstances which Influence the Condition of the Labouring Classes of Society*, by John Barton, London, Arch, 1817.

cannot be made but with the contribution of their labour. By investing part of a capital in improved machinery, there will be a diminution in the progressive demand for labour; by exporting it to another country, the demand will be wholly annihilated.

The prices of commodities, too, are regulated by their cost of production. By employing improved machinery, the cost of production of commodities is reduced, and, consequently, you can afford to sell them in foreign markets at a cheaper price. If, however, you were to reject the use of machinery, while all other countries encouraged it, you would be obliged to export your money, in exchange for foreign goods, till you sunk the natural prices of your goods to the prices of other countries. In making your exchanges with those countries, you might give a commodity which cost two days labour, here, for a commodity which cost one, abroad, and this disadvantageous exchange would be the consequence of your own act, for the commodity which you export, and which cost you two days labour, would have cost you only one if you had not rejected the use of machinery, the services of which your neighbours had more wisely appropriated to themselves.